
COMPREHENSIVE WATER SUPPLY STUDY

An examination of current water supply issues

**A FISCAL YEAR 2001
PLANNING AND POLICY STUDY**

**U.S. Army Corps of Engineers
Institute for Water Resources
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PREFACE AND ACKNOWLEDGEMENTS

This report was produced as part of the Fiscal Year 2001 Planning and Policy Studies Programs of the U.S. Army Corps of Engineer Institute for Water Resources. Theodore M. Hillyer performed the study under the supervision of Eugene Z. Stakhiv, Chief Planning and Policy Studies Division, Institute for Water Resources. The Director of the Institute is Robert A. Pietrowsky. Funding of the study effort was support by Janice E. Rasgus, Mission Planning and Development Branch, Planning and Policy Division, Civil Works.

Lillian Almodovar of the Guidance Development Branch, Planning and Policy Division, Civil Works, provided Headquarters USACE oversight. Her responsiveness to the various drafts developed on each of the issues was always provided in a responsible and professional manner. Two other members of Headquarters were also on the review team, Steven R. Cone, Policy Compliance Support Branch, Planning and Policy Division, Civil Works and Anne M. Young, Legislation, Fiscal and General Law, Office of Chief Counsel. Their diligence, comments and expertise were instrumental in the successful completion of this study.

The Comprehensive Water Supply Study supports the Municipal and Industrial (M&I) water supply mission of the Corps of Engineers. The Water Supply Act of 1958, as amended, provides the Corps with generic authority and cost sharing rules to follow when storage is included in reservoir projects for M&I water supply. Since new reservoir projects are no longer being constructed, reallocations are a common occurrence and reservoirs are now being used more and more for climatological or seasonal use or on a periodic basis in emergency situations such as droughts. There are no specific authorities for these uses of water and as a result, procedures and costs are based strictly on policy. Several districts have submitted proposals and/or have expressed difficulties in working in these areas that do not fit well within current policies and procedures. This study examined those issues and developed options and recommendations. Upon approval of a course of action for each issue, a continuation of this study will be to provide a drafting service to Headquarters with suggested revisions to the regulations and model water supply formats.

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EXECUTIVE SUMMARY

A. INTRODUCTION

Water supply discussions were held at the Senior Leaders Conference in August 1999. At the conference, the Director of Civil Works, queried participants regarding opportunities for program growth in the area of municipal and industrial (M&I) water supply. As a result of these initiatives, Portland District prepared discussion papers on water supply policy issues pertaining to the Rouge and Willamette River Basins in Oregon. In this same time frame, the South Pacific Division was raising concerns about withdrawal of water from flood control pools for irrigation and M&I purposes. Over the course of several years, concerns have also been raised on several occasions regarding Corps of Engineer regulations (ER 1105-2-100 "Planning Guidance Notebook" dated 22 April 2000) as they pertain to drought contingency water supply and water supply for seasonal usage. As a result of these concerns, an initiative was started in the Fiscal Year 2001 Planning and Policy Studies Programs of the U.S. Army Corps of Engineers Institute for Water Resources. This study, the *Comprehensive Water Supply Study*, examined a number of issues in the field of water supply that are not addressed by current policy and regulations. These issues primarily relate to municipal and industrial water supply, but also to a lesser extent, water supply for irrigation uses. A summary of these issues is provided.

Issues to be Resolved

	To be Resolved
1. Small contracts from originally authorized storage.	Can contracting procedures for small amounts of originally authorized storage be made more efficient?
2. Pricing index in reallocations.	In reallocations, can the pricing index be simplified?
3. Drought contingency water supply.	Districts have difficulty in contracting during times of drought, define the problem and provide solution(s).
4. Seasonal water supply.	Districts have difficulty in contracting for seasonal water, define problem and provide solution(s).
5. Selling authorized irrigation storage for permanent M&I.	Identify the optimum way of contracting for permanent M&I water from storage originally authorized as irrigation.
6. Irrigation releases from the flood control pool.	Determine if compensation is warranted; if so, determine price and institutional arrangements to handle contracts.
7. Pricing proposals for minor and/or periodic withdrawals.	Determine if there are existing laws (other than FCA of 44 and WSA of 58) that allow contracting for minor and/or periodic withdrawals for water supply. If appropriate, provide legislative proposal.
8. System versus project specific pricing.	Define issue and develop and evaluate possible pricing procedures.

B. FINDINGS

1. Small Contracts from Originally Authorized Storage. A new proposal was developed that:
 - Applies to contracts from one to ten acre-feet of storage space.
 - The cost of storage will be determined following the same procedure as for all other contracts.
 - Repayment of construction cost and the yearly operation, maintenance, repair, replacement and rehabilitation (OMRR&R) costs will be made in lump sum prior to use.
 - The present worth value of 30-years of OMRR&R cost will be utilized in the lump sum payment. OMRR&R costs will be recalculated every 30-years.
 - Following completion of the lump sum payment, the sponsor acquires a permanent right to the storage space.
2. Pricing Index in Reallocations. ER 1105-2-100 should be revised to:
 - Have all construction items updated by use of the Civil Works Construction Cost Index starting with those costs encountered in 1967.
 - Require the value of lands to be updated by a weighted average of the other indexes.
3. Drought Contingency Water Supply. ER 1105-2-100 should be revised to:
 - Specifically state that cost recovery under drought contingency water is the same as surplus water.
 - Reference ETL 1110-2-335 on the necessity for drought plans and drought contingency contracts.
 - Add a clause informing the user about water storage accounting procedures.
4. Seasonal Water Supply.
 - a. ER 1105-2-100 should be revised by:
 - Deleting the requirement to pay an amount equal to one-half the saving and inserting therefor a requirement to pay a pro-rata share of the storage space (updated cost of construction plus OMRR&R) utilized by the sponsor.
 - Such pro-rata share will be applied for the portion of the year in which the project is utilized.
 - b. The authority to implement seasonal operations is under consideration by the Office of Chief Counsel.
5. Selling Authorized Irrigation Storage for Permanent M&I. A proposal was developed that:
 - Follows the December 1985 Kansas Memorandum of Understanding.
 - Plans under this proposal should only be considered as exploratory, and no commitments should be made to local sponsors prior to approval by the Assistant Secretary of the Army (Civil Works).

6. Irrigation Releases from the Flood Control Pool. This issue has not been resolved. This is a special subset of the Issue 4 on Seasonal Water Supply. Issues remaining are:

- Who should set charge and collect from the sponsor, the Corps or the Bureau of Reclamation?
- If it is determined it should be the Corps, could use Section 6 of the 1944 FCA authority and reduce cost by Section 103 of WRDA '86 (35% of cost).
- If it is determined it should be the Bureau, could use their authorities and cost recovery procedures.
- If water is to be used for a mixture of municipal and industrial as well as irrigation uses, what procedures should be followed?

7. Pricing Proposals for Minor and/or Periodic Withdrawals. After a review of this issue it was decided that existing regulations (ER 1105-2-100, paragraph E-57b) that prescribe the use of Section 6 of the 1944 Flood Control Act for authority and pricing, is sufficient and the development of a new authority was not necessary.

8. System versus Project Specific Pricing. A proposal was developed that provided for:

- Costs to be developed for each project based on current policy and procedures.
- A basin average will be utilized for both costs and yield.
- Plans under this proposal should only be considered as exploratory, and no commitments should be made to local sponsors prior to approval by the Assistant Secretary of the Army (Civil Works) (ASA(CW)).

C. CONCLUSIONS

1. Modify existing regulations and model water supply agreement formats to incorporate the findings related to Issues 1, 2 and 3.

2. Transmit to the Northwestern Division the findings and recommendations related to Issues 5 and 8.

3. Following input by the Office of Chief Counsel and approval by the ASA (CW), complete action on Issues 4 and 6 and modify regulations and model water supply agreement formats.

D. RECOMMENDATIONS

1. Incorporate the findings and conclusions as discussed above into Corps regulations.
2. A continuation of this study into Fiscal Year 2002 to resolve the unresolved issues of this study and to investigate additional issues that surfaced. These new issues include:
 - Contracting for originally authorized storage in pre-WRDA 86 projects where the 30-year repayment has expired or is about to expire. This topic is the subject of proposed legislation for WRDA 2002.
 - The need to clarify the terms “repair” and “reconstruction” in water supply agreements.
 - How to handle dam safety improvement costs in water supply agreements.
 - How to promote a synergy between Civil Works and Real Estate policies on charging for real estate easements.
 - The need to develop policies for specific costs associated with reallocation studies and operational changes for water supply.

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Comprehensive Water Supply Study: An examination of current water supply issues

A. INTRODUCTION

The Fiscal Year 2001 *Comprehensive Water Supply Study* examined a number of issues in the field of water supply that are not addressed by current policy and regulations. These issues primarily relate to municipal and industrial water supply, but also to a lesser extent, water supply for irrigation uses. A summary of these issues is provided in Table 1. A summary of the results of the study is given in Table 2.

Table 1: Issues to be Resolved

	To be Resolved
1. Small contracts from originally authorized storage.	Can contracting procedures for small amounts of originally authorized storage be made more efficient?
2. Pricing index in reallocations.	In reallocations, can the pricing index be simplified?
3. Drought contingency water supply.	Districts have difficulty in contracting during times of drought, define the problem and provide solution(s).
4. Seasonal water supply.	Districts have difficulty in contracting for seasonal water, define problem and provide solution(s).
5. Selling authorized irrigation storage for permanent M&I.	Identify the optimum way of contracting for permanent M&I water from storage originally authorized as irrigation.
6. Irrigation releases from the flood control pool.	Determine if compensation is warranted; if so, determine price and institutional arrangements to handle contracts.
7. Pricing proposals for minor and/or periodic withdrawals.	Determine if there are existing laws (other than FCA of 44 and WSA of 58) that allow contracting for minor and/or periodic withdrawals for water supply. If appropriate, provide legislative proposal.
8. System versus project specific pricing.	Define issue and develop and evaluate possible pricing procedures.

Table 2: Disposition of Issues

		Additional Effort Required
1	Resolved	Modify regulations and model water supply agreement formats.
2	Resolved	Modify regulations.
3	Resolved	Modify regulations.
4	Not resolved	Input by Chief Counsel, approval by ASA(CW) and modify regulations and model water supply agreement formats.
5	Resolved	Develop memorandum to CENWD
6	Not resolved	This is a special subset of seasonal water (Issue 4). After resolution of problems with Issue 4, coordination with BurRec may be required as well as the need to modify regulations and model water supply agreement formats.
7	Resolved	None. Existing authorities are sufficient.
8	Resolved	Develop memorandum to CENWD

B. ISSUES

1. Issue 1: Small Contracts from Originally Authorized Storage.

a. Statement of Problem. Originally authorized storage space for Municipal and Industrial (M&I) water supply that has not been placed under contract is a finite, diminishing number. There is currently about 780,000 acre-feet of this originally authorized space in 21 Corps projects in five states. Water supply agreements covering this category of storage are normally straight forward, however, problems can occur. One such problem has arisen at the 24-year old Lost Creek, OR project in the Portland District. Of the 10,000 acre-feet of originally authorized storage in this project, 1,403 acre-feet have been placed under contract with four different cities. For the remaining uncontracted storage space the Oregon Water Resources Department (OWRD) could act as purchasing agent for a variety of local water users. If this scenario holds, the OWRD has expressed they would need a more liberal escape clause in the water supply agreement if funding was not available due to the potential loss of a contract in any given year. An alternative to this arrangement is for the district to process the agreements directly with the private users. While this may be feasible for a few users, the Portland District feels it is not set-up administratively to efficiently process a large number of small requests for M&I water.

b. Study. The study first assessed the above two options and then developed two alternative proposals.

(1). Option 1: Enter into an agreement with OWRD. A significant problem with this option is that the OWRD is unable to fund the entire block of storage and must rely on year to year funding either from the end user or the state legislature. To accommodate this particular situation, it would be necessary to modify the standard storage agreement format to either permit a more liberal escape clause or to permit agreements to be amended on an annual or biennial basis to reflect changes in the water amount based on the number of users added or deleted. The OWRD would process individual agreements with users as part of their process of granting a water right to the end-user. One major problem with this option is related to the basic storage concept as defined in the 1958 Water Supply Act (43 USC § 390b) as amended, and the corresponding Public Law 88-140 (43 USC § 390c-e) enacted in 1963. Public Law 88-140 provides for a permanent right to storage once the construction costs have been repaid. Storage agreements from originally authorized storage space are to be entered into under a permanent contractual arrangement, with the allocated costs of storage paid out over a period of not to exceed 30 years. For this reason, modifying storage agreements to include an escape clause or annual modifications, do not conform to the legal requirements of storage agreements. Even if this legal requirement were waived, the 30-year repayment period of the Lost Creek project, where construction was completed in 1977, expires in 2007. After 2007, all allocated construction costs must be repaid before use of storage space is initiated.

(2). Option 2: Enter into agreements with users. An alternative to contracting with the OWRD is for the Portland District to process the agreements directly with the private users. While this may be feasible for a few users, the district has indicated it is not administratively able to efficient to process a large number of requests for small amounts of M&I water. Under existing policy and procedures, once an agreement is signed the Operation, Maintenance, Replacement, Repair and Rehabilitation (OMRR&R) costs must be determined at the end of every year, added to the required annual payment on the investment, and an invoice sent yearly to each user. For small contracts the cost of this annual processing can be greater than the cost recovered.

(3). Proposal 1: Enter into a surplus water agreement. Since the OWRD is unable to handle repayment costs except on a year-to-year basis, an option for the Portland District is to enter into one or more surplus water agreements with OWRD. Under this scenario, no changes to policy and contracting procedures would be needed. These surplus water agreements can be for a period of from one to five years. Under this arrangement, there is no permanent right to storage and costs are recalculated every time a new agreement is entered into. As discussed in ER 1105-2-100, costs under surplus water agreements are determined using the same procedure as for a reallocation. In a reallocation, costs are usually determined by the updating cost of storage procedure. Under the updating procedure, costs must be indexed up from the mid-point of construction to current price levels. In the case of Lost Creek, this would require the costs to be updated by a factor of approximately 4 for contracts negotiated in 2001. This factor would continue to escalate in the future, commensurate with in inflation.

(4). Proposal 2: New procedure for small contracts. Develop a procedure whereby the district could enter into a lump sum one-time water supply storage agreement with each user for the amount of storage desired including the cost of storage and 30 years of present worth value of OMRR&R. The sponsor will repay these costs upon signing of the agreement. These agreements would be approved by the District Engineer (subject to the limitations noted in Table E-31 of ER 1105-2-100). This procedure is developed in following paragraph c.

c. Resolution of Issue.

(1). Investigation. In order to develop new procedures on contracts for small amounts of storage the first step was to determine which districts have a large number of “small” contracts and to review the practices and procedures of those districts. The amount of water actually withdrawn on a yearly basis per acre-foot of storage will, of course, vary from project to project and from user to user. However, with one acre-foot of storage space equal to 325,851 gallons of water, considerable water is available from a very small amount of storage space. In addition, these small contracts will normally be with individuals or entities, which do not necessarily have significant capital resources. For these reasons and because district engineers can approve

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contracts of up to 99 acre-feet, 99 acre-feet was the amount of storage used as the cut off point as to what to consider as “small.” A review of the *Water Supply Handbook*, IWR Report 96-PS-4, revised December 1998, revealed that only five districts had storage agreements of 99 acre-feet or less (see Table 3). Based on this record, only the Tulsa District was contacted concerning their procedures. The Tulsa District typically handles small contracts by using the standard long-

Table 3: Range of Distribution of Small Storage Contracts

		Range of Storage Space (acre-feet)					Total
Number of Contracts							
	Wilmington			1			1
	Savannah					2	2
	Huntington					1	1
	Little Rock				1		1
	Tulsa	15	7	2	6		30

term water storage contract prototype provided at the Office of Chief Counsel’s home page (www.hq.usace.army.mil/cecc/cepc.htm). Repayment is made as a lump-sum payment for the storage cost and 25 years of present worth value of OMRR&R costs. The district indicated this procedure providing for a lump sum long-term agreement was defined by HQ a number of years ago. It was, however, never but into regulations. Tulsa District has made the determination that water rights issued which amounted to 1 acre-foot and above would require a contract. The district considers as “small” any contract that costs the district more to administer on a yearly basis than is recovered from the local sponsor through the contract. Since these contracts are all for less 99 acre-feet, the District Engineer has the authority to approve them, thereby reducing the time for processing and approval (subject to the limitations noted in Table E-31 of ER 1105-2-100).

(2). New proposal. A new policy and procedure for small amounts of M&I water supply is provided in the following paragraphs.

(a). Definition. “Small” is defined as storage space of from one (1) but not more than ten (10) acre-feet. Districts may request an exception to this rule whenever they can show that the cost of administering the contract on a yearly basis is greater than the cost to be recovered by the contract.

(b). Cost. The cost of storage for “small” contracts will be determined following the same procedure as for large contracts. If the storage is in a new project or if it is in an existing project that has authorized but uncontracted M&I storage, the cost is calculated as the original cost of construction (prorated by the amount of storage) plus interest on the unpaid balance as appropriate. This is the procedure to follow at the Lost Creek project. However, if the storage space has been reallocated, the cost to the non-Federal sponsor will normally be established as

the highest of the benefits or revenues foregone, the replacement cost, or the updated cost of storage in the Federal project.

(c). Repayment terms. Small amounts of storage shall require the following three repayment terms. The sponsor acquires a permanent right to storage after the lump sum payment.

(i) A lump sum payment, prior to use, for the allocated cost of the storage. If this is an existing project with authorized storage space, as is the case with the Lost Creek project, the payment will include interest on this allocated storage space after the 10-year interest free period. The interest rate to use in this case will be the 1958 Water Supply Act rate that was in effect when construction of the project was initiated. However, if the project is a post WRDA 1986 project, the interest rate to use will be as established in Section 932 of that Act.

(ii) A pro-rated share of the estimated present worth value of 30 years of project OMRR&R to be included in the lump sum payment prior to use of the allocated storage. The interest rate to use for determining the present worth value will depend upon the timing of the project construction. If before 17 November 1986, the project's 1958 Water Supply Act rate will apply, if on or after 17 November 1986, the 1986 WRDA water supply rate will apply. The OMRR&R cost will be determined by taking an average of the projects' last 5-years joint-use OMRR&R costs and multiplying by the users percent share of the joint-use operation and maintenance cost allocated to water supply. This 5-year average should be brought to current year values, then escalated at the inflation rate established by Program Management Division (CECW-B) in their latest Fiscal Year Engineer Circular on *Program Development Guidance* for a 30-year period and then discounted at the current interest rate.

(iii) OMRR&R will be recalculated every 30-years.

d. Additional Issue. As indicated in subparagraph a, there are currently about 780,000 acre-feet of originally authorized storage space in 21 projects that are not under repayment agreements. The storage space in these projects was authorized and included in the projects under the language of the 1958 Water Supply Act. Such language required all costs allocated to water supply to be repaid within the life of the project but in no event to exceed fifty years after the project is first used for the storage of water for water supply purposes. The 1986 Water Resources Development Act subsequently changed the requirement to repay the costs over a 30-year period. In a few cases this 30-year period has expired, or is about to expire. A legislative proposal has been developed for WRDA 2002 that would modify the 1958 Water Supply Act, as amended, to permit the repayment over a 30-year period, even if that 30-years extends beyond the 50 year repayment requirement of the 1958 Act. The resolution of this additional issue and subsequent modification to the regulation and model water supply agreements are subject to this WRDA 2002 legislative proposal.

2. Issue 2: Pricing Index in Reallocations.

a. Statement of Problem. To set the price of reallocated storage, current regulations require the charging of the highest of benefits or revenues foregone, the replacement cost, or the updated cost of storage. As a test of financial feasibility, the higher of these annual costs of storage must be compared to the annual cost of the most likely, least costly alternative the non-Federal interest would undertake in the absence of the reallocation action. In most all cases, the updated cost of storage is the highest measure of cost, but is still lower than the non-Federal alternative. One item that could be improved on in this updating procedure is the method used to update the costs of construction. Prior to 1977, costs of reallocated storage were not updated, only the asbuilt costs were used. The first updating procedure was established in 1977. Under this procedure, the allocated construction cost was updated by use of the *Engineering News Record* Construction Cost Index (ENRCCI). This procedure was subsequently modified in 1987 to update costs by the Corps of Engineers Civil Works Construction Cost Index System (CWCCIS). However, the CWCCIS only started to update costs in 1967 and did not cover all items. For these reasons, the ENRCCI was still used for indexing of all items constructed prior to 1967 as well as those items not covered by the CWCCIS (relocations; buildings, grounds and utilities; and permanent operating equipment) constructed subsequent to 1967 (see Table 4). The current version of CWCCIS (EM 1110-2-1304, dated 31 March 2000) now includes all features. The purpose of this issue was to explore measures and desirability of modifying the water supply policy and regulations governing the price updating methodology for costs encountered in 1967 and after.

Table 4: Procedure Established in 1987 to Index Costs of Reallocated Storage

	Index	
		Costs Starting in 1967
Relocations	ENRCCI	ENRCCI
Buildings, grounds and utilities	ENRCCI	ENRCCI
Permanent operating equipment	ENRCCI	ENRCCI
Reservoirs, dams and roads	ENRCCI	CWCCIS
Lands and damages	Land values will be updated on a case-by-case basis by a qualified Corps of Engineers real estate appraiser.	

b. Study. A cursory review of Headquarters files on recent M&I water supply reallocations was performed. This review disclosed there had been 11 reallocations from eight districts in four divisions covering the period of November 1994 to November 2000. A summary of these reallocations is provided in Table 5. With respect to the indexing of the items not covered by the CWCCIS, in every case except one, the district used the CWCCIS for all features to index up from 1967 to the current time. The only exception was the Tulsa District, which followed the guidelines and used a combination of the ENRCCI and the CWCCIS after 1967. In

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every one of the 11 cases, regardless of the indexing method, the report was approved at the HQ and ASA(CW) level.

Table 5: Reviewed Reallocations

				User
South Atlantic	Savannah	Nov. '00	J. Strom Thurmond, GA&SC	McCormick
	Mobile	1999	Lake Allatoona, GA	City of Cartersville
Lakes and Rivers	Huntington	July '00	Grayson Lake, KY	Rattlesnake Ridge Water District
	Louisville	July '97	Cave Run, KY	West Liberty
		1997	Rough River, KY	Leitchfield
	Nashville	May '96	Center Hill, TN	Riverwatch Resort
Mississippi Valley	Vicksburg	Aug. '95	Lake Ouachita, AR	N. Garland County RWD
Southwestern	Little Rock	Nov. '94	Greers Ferry, AR	Community Water System
		1996	Beaver Lake, AR	Washington & Benton Counties
		Oct. '00	Greers Ferry, AR	Herber Springs
	Tulsa	1996	Lake Texoma, TX & OK	City of Sherman


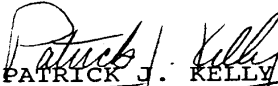
c. Resolution of Issue. Revise the language of ER 1105-2-100 dated 22 April 2000 to have all construction items updated by the CWCCIS starting with those costs encountered in 1967.

d. Additional Issue. As indicated in Table 4, the 1987 procedure established that a qualified Corps of Engineers real estate appraiser would update the land values on a case-by-case basis. The value of the land was not to include enhancement due to the presence of the existing project. Experience showed, however, that this method created problems due to difficulties in separating out the presence of the project. For this reason a new updating procedure was established and distributed to the MSC's in January 1991 (see Box 1). As indicated in Box 1, the new procedure required the value of the land be updated by a weighted average of the other indexes. Although this 1991 letter indicated the Planning Guidance Notebook (ER 1105-2-100) would be changed to reflect the guidance provided in the letter, this never happened. Records show, however, that the districts are adhering to the 1991 guidance. In every one of the reviewed reallocations (Table 5), the value of the land was updated by a weighted average of the other indexes. As part of this issue, the regulations will be corrected to conform to the 1991 guidance.

3. Issue 3: Drought Contingency Water Supply.

a. Statement of Problem. Drought contingency water supply can be considered as a climatological situation. In these cases drought can be a hit and miss situation, i.e., water is needed only periodically and not on a yearly basis. At the same time, local interests want to be assured that water will be available when needed. Planning and Policy Division guidance on drought contingency water supply is contained ER 1105-2-100, paragraph E-57c. While not explicitly stated in the guidance, it is implied that the cost of drought contingency water should

Box 1: 1991 Letter to MSC's

	<p>DEPARTMENT OF THE ARMY U.S. Army Corps of Engineers WASHINGTON, D.C. 20314-1000</p> <p>24 JAN 1991</p> <p>REPLY TO ATTENTION OF:</p>
<p>CECW-PD</p>	
<p>MEMORANDUM FOR MAJOR SUBORDINATE COMMANDS</p>	
<p>SUBJECT: Change in Method of Updating the Cost of Lands for Storage Reallocations for Municipal and Industrial (M&I) Water Supply Contracts</p>	
<p>1. The Assistant Secretary of the Army for Civil Works has approved a new method of updating the value of lands when storage is reallocated to M & I water supply. The current method is to update land values on a case-by-case basis by a qualified Corps of Engineers real estate appraiser. The value of the land is not to include enhancement due to the presence of the existing project. Experience has shown that this method creates problems in updating costs due to difficulties in separating out the presence of the project.</p> <p>2. The new method is to update land values by the weighted average update of the other project features. Other project features are escalated to present day price levels by use of a combination of the Corps of Engineers Civil Works Construction Cost Index System (CWCCIS) and the Engineering News Record (ENR) Construction Index. There is currently no single index similar to the CWCCIS and the ENR that is used by Corps of Engineers real estate offices. The new method will keep the relative value of the land the same in the updated cost as it was in the original project cost and will reflect general inflation over time.</p> <p>3. This change is effective immediately and should be applied to reallocation and surplus water supply storage contracts which have not already been approved. The sections in the Planning Guidance Notebook (ER 1105-2-100, 28 December 1990, to be issued early in 1991) dealing with water supply (Chapter 4, Section VII) will be revised at a later date to reflect this change in pricing procedures.</p>	
<p>FOR THE COMMANDER:</p>	
<p> PATRICK J. KELLY Major General, USA Director of Civil Works</p>	
<p>DISTRIBUTION (See page 2)</p>	

be determined the same as surplus water. The *Water Supply Handbook* (IWR Report 96-PS-4, Revised December 1998), while not official Corps guidance, recommends that the cost of drought contingency water will be determined using the same procedure as for surplus water. Engineering Division regulations also contain the requirement that a Drought Contingency Plan is to be a part of every project operation manual. This policy is contained in ETL 1110-2-335, dated 1 Apr. 1993 "Development of Drought Contingency Plans," paragraph 7e. Paragraph 8-04 of Enclosure 2 to this ETL indicates that a fully implementable contract for the sale or use of water that may be available to address drought situations be included in the drought contingency plans.

b. Study. To resolve this issue, selected Corps offices were surveyed concerning their experiences with drought planning and their comments on the Headquarters guidance referenced above. The response from five district offices in four different divisions as well as one division office is summarized in Table 6.

c. Resolution of Issue. A review of these responses indicates the offices are either not reading the regulations or do not want to follow the regulations. Regulations require a ready to execute contract and Section 6 of the 1944 Flood Control Act provides authority and a pricing mechanism. The recommendation of the study, therefore, is to clarify in ER 1105-2-100 to specifically state that cost recovery under drought contingency water is the same as surplus water. The regulation will also reference ETL 1110-2-335 on the necessity for drought plans and drought contingency contracts. A clause will also be added informing the user about water storage accounting procedures.

Table 6: Summary of Responses to Drought Questions

				Remarks
Dist 1 Div 1	Yes	No	No	Drought plans were developed years ago and need to be updated. Did not know what price should be put on drought water.
Dist 2 Div 1	Yes	No	No	The price of drought water should be about 3 to 5 times the standard price.
Dist 3 Div 2	Yes	No	No	Responder unaware of the need for a ready to execute contract.
Dist 4 Div 3	Yes	Yes	Yes	The price is the updated cost of storage. Responder thought the price should be higher than the updated cost of storage. A higher cost might help the communities to undertake long-term planning for future needs. It would be helpful to include a clause in the standard format on what will happen in the event of a drought.
Dist 5 Div 4	Yes	No	No	
Div 5	Yes	No	No	All projects in the division have a drought contingency plan. Due to complexity of each project, it is impossible to develop a ready to execute standard contract. In case of drought, each instance would have to be determined on a case-by-case basis based on the value of the storage space (project resources used). The division has tried to develop a drought contract, but complained that there is no national policy guidance for the Corps on how to do this.

4. Issue 4: Seasonal Water Supply.

a. Statement of Problem.

(1). Background. General Congressional authority for including storage space in Corps projects for seasonal operations for M&I water supply, as an alternative to reservoir storage space, has not been established. Corps policy and procedures in this area have determined that where not specifically authorized, seasonal operation of a project for water supply may be conducted consistent with authorized project purposes and law and subject to hydrologic and hydraulic capability of the project. This water supply could be used to enhance groundwater replenishment, to increase downstream flow, or to otherwise enhance the general usage of the project for M&I purposes. Seasonal operations for water supply have been considered and

implemented in some of the Corps projects in the South Pacific Division. In these projects, water is stored in the flood control pool during the wet winter season for discharge during the dry summer season. When water is available, this is done on a yearly basis. Corps policies on seasonal operations, first promulgated in 1990 for the Prado Dam, California project, remain in effect today. Over ten years later, however, agreements under this policy in the South Pacific Division have not been finalized. The problems associated with the current seasonal operations policy and an alternative suggested procedure is the subject of this issue. For the Prado project, the Office of Chief Counsel approved a novel cost recovery approach (Title 33 USC § 701h). In addition to the Prado project, there are also four projects in the Los Angeles County Drainage Area (LACDA): Santa Fe, Whittier Narrows, Hansen and Lopez dams. When negotiations under our regulations for seasonal use could not be finalized, special legislation in Section 211(f)(2) of PL 104-303 (WRDA 1996) was developed for water pricing at these projects.

(2). Current policy. Guidance on seasonal operations is contained in ER 1105-2-100, paragraphs 3-8b(6) and E-54a(3). The specific guidance states the non-Federal sponsor shall pay:

- (a) 100% of the new construction costs and new operational costs,
- (b) a share of the joint use operation, maintenance and replacement cost based on the use-of-facilities cost allocation,
- (c) benefits foregone,
- (d) compensation to others for losses in their operations (may be same as (c) above, and
- (e) payment of an amount equal to one-half the savings to non-Federal interests (least cost alternative minus the specific cost of the modifications). In any case, the cost to the non-Federal sponsor should not exceed the costs derived for permanent reallocation of storage (as derived elsewhere in the regulations).

b. Concerns Related to Current Policy. Experience in projects where an attempt has been made to implement the current policy on seasonal operations has demonstrated that the problem lies in the requirement that the local sponsor must pay one-half of the difference between the least cost alternative and the specific costs of the modifications. The critical issue is the difficulty associated with identifying the “least cost alternative.” In the dry Pacific Southwest, it is next to impossible to develop an alternative with the same reliability (or lack thereof) as the Federal project. Also, users object paying the Federal Government for what could be deemed as “savings” they would accrue as a result of the changed operations since all actual costs, i.e., share of construction, operation, maintenance, repair, replacement and rehabilitation, etc., are recovered under the other requirements in the policy.

c. Resolution of Issue.

(1). Proposed change. To solve the concerns with the current policy, it is proposed to modify above subparagraph (e). The proposed change is denoted by strikethrough for deletion and bold for addition. “~~(e) payment of an amount equal to one-half the savings to non-Federal interests (least cost alternative minus the specific cost of the modifications). In any case, the cost to the non-Federal sponsor should~~ **a cost for the use of the Government facility to be based on a pro-rata share of the storage space utilized by the local sponsor to the total useable storage space in the project, but** not exceed the costs derived for permanent reallocation of storage (as derived elsewhere in the regulations). **This ratio will be applied to the joint-use construction cost (updated to current price levels) and then annualized over 30-years. This annualized cost shall then be applied for the portion of the year in which the project is utilized. To this pro-rated annualized cost shall be added the pro-rata share of the previous yearly joint-use operation and maintenance costs (also based on the portion of the year in which the project is utilized by the sponsor). The local sponsor shall be billed yearly for this cost to use the Government facility. These costs will be paid annually.”**

(2). Authority. The authority to implement seasonal operations could be either the 1958 Water Supply Act (storage) or Section 6 of the 1944 Flood Control Act (surplus water). The Office of Chief Counsel is exploring this issue on authority as well as the appropriate term of the agreement (5 or 30 years) and the option for a permanent right to storage. Regulations will not be modified to incorporate this proposal until these concerns have been resolved.

5. Issue 5: Selling Authorized Irrigation Storage for Permanent M&I.

a. Statement of Problem. The Willamette River Basin in the Portland District consists of a system of thirteen reservoirs operated together for the purposes of flood control, irrigation water quality and recreation. These projects, as shown in Table 7, were authorized by three different acts over a period of 22 years. Also shown in the table are the year the project was constructed and the conservation storage space. As the area continues to grow, demand for water supplies to serve communities and industry is increasing, as is the competing demands for recreation and water quality needs. The issue at hand is how to utilize the authorized irrigation storage for municipal and industrial water supply. Table 8 provides a summary of available storage and current and projected operational requirements. This projection indicates the total additional conservation storage requirements, exclusive of hydropower, to be approximately 200,000 acre-feet in 2020 and 760,000 acre-feet by 2050 for up to a possible total of 1,170,000 acre-feet in 2050. From Table 7, the total conservation storage available in all 13 projects, including hydropower is 2,308,020 acre-feet. Information is not available to breakout the authorized storage for each project. There is sufficient information, however, to show that the

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projects as authorized and constructed many years ago, need to be modified to some extent to provide for projected future M&I water supply needs.

Table 7: Willamette Basin Projects

			Conservation Storage (acre feet)
1938 FCA	Lookout Point (includes Dexter Re-regulation Dam)	1955	442,990
	Cottage Grove	1942	31,780
	Dorena	1949	72,050
	Fern Ridge	1941	101,070
	Detroit (includes Big Cliff Re-regulation Dam)	1953	436,010
1950 FCA	Hills Creek	1961	350,010
	Fall Creek	1966	117,830
	Cougar	1964	207,760
	Blue River	1969	82,820
	Green Peter	1968	409,830
1960 FCA	Foster	1968	55,870
Total conservation storage			2,308,020

**Table 8: Summary of Storage Requirements
(acre-feet)**

				Total Future Basin Requirements
Irrigation	60,000	95,500	550,500	610,500
Fish	0	0	0	0
Water Quality	250,000 to 350,000	unknown	unknown	at least 350,000
Recreation	0	0	0	0
Water Supply	0	103,000	208,000	208,000
Total	310,000 to 410,000	at least 200,000	at least 760,000	1,070,000 to 1,170,000

b. Proposals for Water Needs and Sponsorship Requirements.

(1). Current policy. Current policy and procedures to meet the M&I water supply demands of the non-Federal sponsor(s) would require a reallocation under the procedures established in ER 1105-2-100, paragraphs 3-8b(5) and E-57d. Under this procedure, the sponsor must pay the higher of the benefits or revenues foregone, the replacement cost, or the updated cost of storage in the Federal project. For the projects in the Willamette Basin, assuming that hydropower storage would not be reallocated, the updated cost of storage would prevail. For

these old projects, this would require an update of about 25 times the original cost for Fern Creek (operational in 1941) to about 5 times for the most recent project (Blue River) operational in 1969. This procedure could be followed on a project by project basis as the need developed. Local interests object to this pricing policy and feel it is unfair. Surplus water agreements could also be an option for temporary use. The price of surplus water, however, is determined the same as for reallocation.

(2). Local option. Current irrigation contracts provide for the sale of water at original authorized prices plus a small administrative fee. This amounts to about \$8 per acre-foot of water. Since the Bureau of Reclamation administers these contracts, it is possible that some irrigation water could be utilized for M&I water supply purposes. The local sponsors could also, perhaps, meet their needs through the use of natural flow (if available), raising existing dams, construction of small dams, conservation, aquifer storage and recovery and the expanded use of rivers outside the basin. Some of these local options, however, could prove to be more environmentally damaging than reallocation of unutilized storage.

c. Resolution of Issue.

(1). Introduction. Develop a memorandum to the Northwestern Division suggesting the Portland District explore a partnership with the State of Oregon similar to that entered into in 1985 between the Federal Government and the State of Kansas. The division and district must be cautioned that this is only a preliminary proposal for the district to explore as a possible solution to the problem in the Willamette Basin, that this proposal has not been discussed, staffed or cleared with the Office of the Assistant Secretary of the Army (Civil Works) and the Corps should make no commitments to potential local sponsors.

(2). Kansas Memorandum of Understanding. The partnership between the State of Kansas and the Federal government was entered into on December 13, 1985 and is referred to as "The Kansas Memorandum of Understanding" (MOU). This Federal/State partnership was designed to accomplish three items: take advantage of a unique opportunity to solve water supply problems in the State of Kansas, enhance the recovery of past Federal investments in water resources development in Kansas, and shift a greater portion of the operation and maintenance expenses to the State. A key element of this partnership was for the Department of the Army to calculate the price of any water supply storage that may be made available as a result of the new partnership on the same basis that would have occurred if such storage originally had been authorized as M&I water supply storage. While this action was not to be considered as precedence setting, it may offer an opportunity for a similar result in the Willamette Basin. The benefits to the State of Kansas and to the Nation are summarized in Box 2. In addition to its commitments to protect water quality inflows and releases and pursuing system-wide operation in conjunction with the Corps, the State of Kansas also provided other considerations as

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contributions to the partnership embodied in the MOU. These considerations are summarized in Box 3.

	Major Benefits to the Nation
1. Create a dependable water supply since the users never controlled the quality or the quantity of the releases that would take place under the old system.	1. Reimbursement of Federal investment and operation and maintenance cost for the State acquisition of water supply storage in the reservoirs.
2. Determined the availability of excess water storage that would be made available through the studies performed under the agreement.	2. Obtained from the State of Kansas their pledge to protect the water quality inflows and releases. This would make it possible to meet the water quality objectives of Federal government.
3. Gained control over the lake regulation to enhance their water management program.	3. The State of Kansas would make up-front payments to secure their commitment and responsibility within the agreement.
4. Price of water supply storage based on the same basis that would have occurred if such storage had originally been authorized for water supply storage instead of the more expensive updated cost of storage required by ER 1105-2-100.	

1. Cost sharing on a 50/50 basis of the reallocation studies to be conducted on each of the reservoirs where reallocation is to be considered.
2. Agreement to pay cash up front for all water supply storage purchases.
3. Immediate establishment of an escrow account of \$4 million, earmarked for the purchase of water supply storage under the MOU.
4. Immediate assumption of 100% of the operation and maintenance costs allocated to each increment of storage at the time of purchase.

(3). New agreement with Oregon. The district may investigate a similar plan assuming the State of Oregon to be the potential sponsor. The plan would have to have particular reservoirs in mind for reallocation, a time frame for reallocation and present the costs under both existing regulations and as presented in the Kansas MOU. These costs should include not only the cost of the original investment but also the present worth of the anticipated operation, maintenance, repair, rehabilitation and replacement costs over a 30-year period. Any preliminary proposal submitted should just be a general overview. If such a concept is approved,

additional justification may be required. Should the plan be approved, each separate actual future reallocation would have to follow the reporting requirements as presented in ER 1105-2-100.

6. Issue 6: Irrigation Releases from the Flood Control Pool.

a. Statement of Problem. Situations have developed in some Corps' Western reservoirs where irrigation storage is an authorized project purpose through authority of Section 8 of the 1944 Flood Control Act. On occasion, requests have been received from local irrigators for the Corps to periodically hold water in the flood control pool through changes in the project operational plan for later release on demand. In California, the requesting agency is always an irrigation district that often include both irrigation (agricultural) and M&I users. In these irrigation districts, the water can be used for their own purposes and/or for sell for profit to others. Since in these projects, the Bureau of Reclamation (Bureau) administers the irrigation repayment agreements, the Corps does not know what the final water use will be, nor does the Corps have authority to question the irrigation districts. When these situations occur, questions have arisen about the appropriateness of such actions without due compensation. If compensation in the form of monetary payments is appropriate, questions arise as to the correct charge and the appropriate collection agency, the Corps or the Bureau. Therefore, for these projects, in addition to the issues similar to those associated with seasonal operations at Prado Dam, there are also issues associated with authority, pricing and collection of funds.

b. Resolution of Issue. This issue has not been resolved. This is a special subset of seasonal water supply. Upon resolution of the problems associated with seasonal use (above paragraph 4), the special problems associated with this issue will be explored. These issues are:

- Who should set charge and collect from the sponsor, Corps or Bureau?
- If the Corps, we could use Section 6 of the 1944 FCA authority and reduce cost by Section 103 of WRDA '86 (35% of cost).
- If the Bureau, they could use their authorities and cost recovery procedures.
- If water is to be used for a mixture of municipal and industrial as well as irrigation, what procedures should be followed?

7. Issue 7: Pricing Proposals for Minor and/or Periodic Withdrawals.

a. Statement of Problem. Between 1972 and 1987 HQUSACE utilized an authority identified as Section 501 of the Independent Office Appropriation Act of 1952 (31 U.S.C. § 483a, subsequently changed to § 9701) for minor and/or periodic withdrawals. During these fifteen years, this authority was used on numerous occasions in many divisions and districts around the country when surplus water was not used or storage space needed. In a legal opinion dated 23 May 1986, Army General Counsel advised against further use of this authority as "it is

questionable whether Congress really intended the act to serve as a water marketing statute.” Regulations were subsequently modified to require that existing contracts under this authority be allowed to expire and not be renewed. Regulations also prohibited the use of this authority in the future.

b. Study. This study looked into the possibility of utilizing existing authorities and/or the development of a legislative proposal for a new pricing mechanism. Two existing authorities were found, Title 33 and Section 6. The Title 33 authority was utilized in the Prado, California project (see above paragraph 4a(1)). After further review of this authority it was determined that this authority was appropriate only where construction was to be a part of the solution. As this is not the normal case, no further consideration was given to this authority. The other authority, Section 6 of the 1944 Flood Control Act, provides the Corps authority to sell surplus water and can also be used when only minor or periodic withdrawals are requested. This use of Section 6 for minor and/or periodic withdrawals is recommended in ER 1105-2-100, paragraph E-58a(3), through the use of the “Water Withdrawal Permit.” This permit gives the divisions and districts additional wherewithal to satisfy local needs for minor withdrawals through the use of the authority of Section 6 of the 1944 FCA. No other authorities were readily discernable.

c. Resolution of Issue. After a review of this issue it was decided that existing regulations (ER 1105-2-100, paragraph E-57b) which prescribe the use of Section 6 of the 1944 Flood Control Act for authority and pricing, is sufficient and the development of a new authority was not necessary.

8. Issue 8: System versus Project Specific Pricing.

a. Statement of Problem. The Portland District has requested that HQUSACE approve a system-wide pricing concept that would allow sponsors to purchase conservation storage. The district indicates it is necessary to operate the Willamette Basin as a system, as it provides the Corps the most flexibility when formulating the annual water release plan. Even though the water may be withdrawn directly downstream of a specific project, it is necessary to coordinate releases elsewhere in the system to meet minimum flow requirements at the cities of Albany and Salem.

b. Study.

(1). Willamette basin. The Willamette basin consists of a system of thirteen reservoirs (see Figure 1) operated jointly for the purposes of flood control, irrigation, water quality and recreation. As recognized in authorizing documents, it is the annual weather patterns in the Pacific Northwest and the runoff characteristics of the basin that allow the system to be operated

Figure 1: Willamette River Basin, Oregon



to balance the range of authorized purposes. The well-defined limits of the flood season and planned use of storage space after the flood season allows for the impoundment of spring runoff. During the summer and early fall months, stored water is either retained in the conservation pool for recreation, or is released downstream to meet other authorized purposes. Water is released according to each project's drawdown priority. For example, the Fern Ridge and Detroit reservoirs are used last, if at all, for augmenting mainstem flows because of their high recreation demand. Starting after Labor Day, water is released from the reservoirs to bring them back down to their minimum flood control pool elevations in order to provide storage for the winter flood season. A generalized order of drawdown is shown in Figure 2.

(2). Regulations. Under Corps procedures, costs are allocated on a project by project basis. The separable costs-remaining benefits method of cost allocation is the preferred method to allocate costs. Under this procedure costs are distributed to individual purposes to determine cost sharing requirements. For M&I water supply, once costs of construction have been recaptured, the non-Federal sponsor acquires a permanent right to that storage (ER 1105-2-100, paragraphs 3-8b(2) and E-54a(6)). Existing Corps regulations do not recognize a system approach to allocating costs. In the Willamette basin, neither storage space nor costs have been assigned to M&I water supply in any of the reservoirs.

c. Resolution of Issue. Develop a memorandum to the Northwestern Division suggesting the Portland District follow a system approach to pricing. The division and district must be cautioned that this is only a preliminary proposal for the district to explore as a possible solution to the problem in the Willamette Basin, that this proposal has not been discussed, staffed or cleared with the Office of the Assistant Secretary of the Army (Civil Works) and the Corps should make no commitments to potential local sponsors.

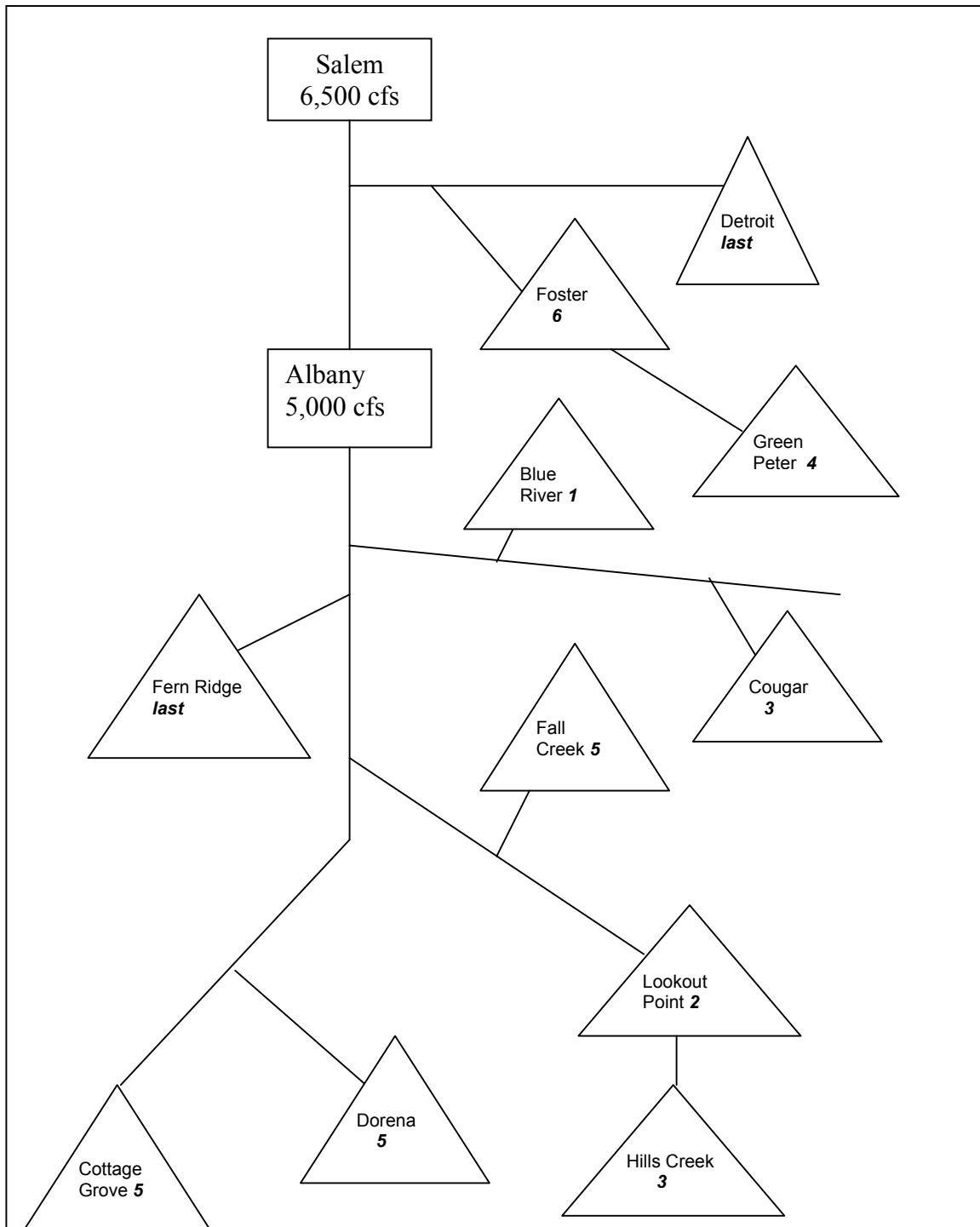
(1). Basic assumptions. For this system pricing of M&I water supply storage, there are two basic assumptions:

- costs will be developed for each project based on current policy and procedures and
- a basin average will be utilized for costs and yield.

(2). Cost of storage.

(a). Introduction. As outlined in ER 1105-2-100, the cost of storage will be determined based on the manner in which the storage space is included in the project. If it is originally authorized, costs are determined one way, if a reallocation, the cost of storage is determined by a different procedure. In any one basin, there may be projects with both kinds of storage space. In addition, if some of the storage is from a reallocation, the price of the storage could be determined based on lost revenues or benefits or on the updated cost of storage. For these reasons, each project must be examined separately and a 30-year cost per acre-foot of storage for

Figure 2: Willamette River Basin Generalized Order of Reservoir Drawdown (After 1985)



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that project determined. To this cost will be added the yearly joint use O&M costs for the most recent year determined on a cost per acre-foot basis. The joint use RR&R costs will be recaptured as expenditures are made and annualized on a 30-year basis and added to the total. Interest rates will vary for each project based on when the water supply storage space was included in the project. Annualizing of the RR&R costs will also vary depending on the year the costs are incurred. All annualized costs are to consider a 30-year repayment period.

(b). Average cost method. Costs of reallocated storage for the Willamette basin projects were previously determined in a 1996 report developed by the Portland District. In that report, costs of each project were determined by the updating procedure. The costs developed for the 1996 report are shown in Table 9. For the eleven projects the average cost per acre-foot of storage was \$114.50. This value will remain constant for the 30-year repayment period. To this yearly cost will be added the average joint use OMRR&R expense. The O&M component will be based on the previous years joint use expense for the projects. The RR&R component will be based on the previous years joint use expense for these items and amortized over a 30-year repayment period at the current interest rate. These RR&R costs will be accumulative. This combined OMRR&R cost for the first year of this agreement (in this case \$6.30/AF) would be computed yearly. The numbers in the table have been rounded for convenience; actual numbers should be determined to the nearest cent and the costs must be updated to the year in which the report is prepared.

Table 9: Cost of Storage Space Determination

					30-year Joint Use RR&R (\$/AF)
1	Blue River	121		3	0
2	Lookout Point	135		8	1
3	Hills Creek	91		1	1
	Cougar	142		6	0
4	Green Peter	67		5	1
5	Dorena	169		6	0
	Cottage Grove	91		20	0
	Fall Creek	69		4	0
6	Foster	249		2	0
last	Fern Ridge	32		8	0
	Detroit	94		2	1
Basin Total		1,260		65	4
Basin Average		114.50		5.90	0.40

(3). Basin average. For any basin, the order of water releases will vary. In the Willamette Basin, the order of release is shown in the first column of Table 9. While this schedule could be subjected to yearly modification, the schedule shown has been in effect since

1985. As shown in the table, the cost of storage space will vary from a high of \$249/AF to a low of \$32/AF, neither of which are likely to be utilized. While the first and second order of drawdown produces a cost that is higher (\$128/AF) than the average, by the time the fourth order of drawdown has been completed the cost is lower (\$111/AF) than the basin average. In summary, while the basin average cost is not an exact method of determining costs, based on the uncertainty of the order of releases, it is a reasonable estimate.

(4). Storage/yield relationship. Each of the 11 reservoirs will, more than likely, have a different storage/yield relationship. How this relationship may or may not match up with the cost of storage is unknown. A more expensive project could provide a greater yield and result in a less need for storage and, therefore, be no more costly than a less expensive project with a lesser yield. Since the 11 reservoirs are operated as a system, again it is recommended that the basin storage/yield relationship be determined on an average basis. The district must determine the amount of water desired by the local sponsor and convert that to storage space. For example, if the user desires a total of 1 MGD from the system of eleven reservoirs, and the average storage/yield relationship of the eleven projects is 1,000 acre-feet per million gallons, the sponsor must contract for 1,000 acre-feet of storage space. Based on the above example, the sponsor would be responsible for \$114.50/AF x 1,000 AF or \$114,500 per year for 30-years. For the first year of the contract the sponsor would also be responsible for an additional \$6.30/AF x 1,000 AF or \$6,300 for the cost of OMRR&R. The actual release of water to meet the 1 MGD demand would be an operational exercise for the Portland District and immaterial to the cost of storage.

(5). Permanent right to storage. Under the 1963 Act (Public Law 88-140), a permanent right to storage is extended to the non-Federal sponsor once the costs of storage have been repaid. In the case of a system approach, however, repayments are not assigned to any one project, or are releases from any one project associated with repayment. It is recommended, therefore, that based on the above example of 1,000 acre-feet of storage space needed, the storage would be assumed to come equally from each of the projects. This would result in 1,000 acre-feet of storage space divided by the eleven projects, or 90.9 acre-feet per project. At the end of a 30-year repayment period, the local sponsor would acquire the permanent right to 90.9 acre-feet of storage in each of the eleven projects, provided the yearly OMRR&R costs associated with those 90.9 acre-feet are continued to be repaid.

C. NEED FOR ADDITIONAL EFFORT

1. Several issues were not resolved during the course of this study. These issues are:

a. On Issue 4, seasonal water, the Office of Chief Counsel is exploring the issues of authority, appropriate term for the agreement and whether or not seasonal water can qualify for a permanent right to storage.

b. Issue 6, irrigation releases from the flood control pool, is a special subset of seasonal water. Following the resolution of the issues associated with seasonal water, the exploration of Issue 6 can commence.

c. Answering the mail to the Portland District on Issues 5 and 6, which pertain to Willamette Basin.

2. During the course of this study, several other issues surfaced. These issues are:

a. An additional issue on contracting for originally authorized storage was raised during the investigation of Issue 1 on small contracts. This issue pertains to the contracting for originally authorized storage in pre-WRDA 86 projects where the 30-year repayment has expired or is about to expire. This topic is the subject of proposed legislation for WRDA 2002.

b. The need to clarify the terms “repair” and “reconstruction” in water supply agreements.

c. How to handle dam safety improvement costs in water supply agreements.

d. How to promote a synergy between Civil Works and Real Estate policies on charging for real estate easements.

e. The need to develop policies for specific costs associated with reallocation studies and operational changes for water supply.

3. Because of these outstanding issues it is suggested a continuation and funding for this study into Fiscal Year 2002. Additional drafting service required to revise the regulations and standard water supply formats as a result of the resolution of these items would also be accomplished.

